

**Abstract**

The invention relates to a process for preparing butadiene from n-butane comprising the  
5 steps

- (A) providing an n-butane-containing feed gas stream,
- (B) feeding the n-butane-containing feed gas stream into a first dehydrogenation zone and nonoxidatively catalytically dehydrogenating n-butane to 1-butene, 2-butene and optionally butadiene to obtain a first product gas stream comprising n-butane, 1-butene and 2-butene, with or without butadiene and secondary components,
- (C) feeding the first product gas stream comprising n-butane, 1-butene and 2-butene, with or without butadiene and secondary components, into a second dehydrogenation zone and oxidatively dehydrogenating 1-butene and 2-butene to butadiene to give a second product gas stream comprising butadiene, n-butane and steam, with or without secondary components,
- (D) recovering butadiene from the second product gas stream.

(Figure 1)